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EXAMINER

NGO, HUYEN LE

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|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

2871

DATE MAILED: 07/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/890,553

Applicant(s)

SEIBERLE ET AL.

Examiner

Julie-Huyen L. Ngo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2</u> . | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "microelement array" as recited in claim 12 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-9, 11 and 13-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Suygiyama et al. (US5912717A).

With respect to claims 1, 3 and 13, Suygiyama et al. teach (col. 3 lines 21-63) a method of making a wall of a liquid crystal cell comprising a step of imparting a property to a layer of a material on the wall, said property being that liquid crystal molecules placed on the material on the wall in use of the cell adopt a preferred alignment, the method comprising exposing the material to unpolarised radiation (natural light) of

ultraviolet from an oblique direction, wherein the said property further includes imparting a preferred tilt as well as a preferred azimuthal alignment to such liquid crystal molecules.

With respect to claims 5-7 and 15, Suygiyama et al. teach (col. 3 lines 24-29 and lines 34-36) a method of making a wall of a liquid crystal cell, wherein the imparted preferred tilt (pre-tilting angle) in normal direction (homeotropically orienting).

With respect to claims 8-9, Suygiyama et al. teach (col. 3 lines 31-34) a method of making a wall of a liquid crystal cell, wherein the angle of incidence ϕ of the radiation to the normal to the layer is within the range $5^\circ \leq \phi < 85^\circ$, which covers range $5^\circ \leq \phi < 70^\circ$.

With respect to claim 11, Suygiyama et al. teach (Figs. 3A-B) a method of making a wall of a liquid crystal cell, wherein the radiation to which the material is exposed is zone-wise patterned, whereby, in said imparted property, the preferred alignment is zone-wise patterned.

With respect to claims 4 and 14, Suygiyama et al. disclose (Figs. 4A-B) a method of making a wall of a liquid crystal cell, of which at least one wall is in contact with liquid crystal material ML.

Claims 1 and 13-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Woo et al. (GB 2319093 admitted in IDS).

Woo et al. teach (Figs 12a-h) a method of making a wall of a liquid crystal cell comprising imparting a property to a layer of a material on the wall, said property being

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that liquid crystal molecules placed on the material on the wall in use of the cell adopt a preferred alignment, the method comprising exposing the material to unpolarised radiation (natural light) of ultraviolet from an oblique direction,

wherein

- said property further includes imparting a preferred tilt as well as a preferred azimuthal alignment to such liquid crystal molecules,
- a liquid crystal cell is hybrid aligned nematic, which indicates an orientation form wherein the liquid crystalline polymer is nematic-oriented and the angle of director in the liquid crystalline polymer relative to the film upper surface and the angle of director in the liquid crystalline polymer relative to the film lower surface are different from each other. Thus, since the director-film surface angle is different between the vicinity of the upper interface and the vicinity of the lower interface.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gibbons et al. (US5929201A).

Gibbons et al. teach (col. 14 line 34 to col. 35 line 60) a method of imparting a property to a layer of a material on the wall, said property being that liquid crystal molecules placed on the material on the wall in use of the cell adopt a preferred alignment, the method comprising exposing the material to unpolarised radiation or elliptically/circularly polarized radiation from an oblique direction,

wherein

- said property further includes imparting a preferred tilt as well as a preferred azimuthal alignment to such liquid crystal molecules,
- the irradiation energy (measured normal to the radiation) is 0.001 to $5\text{J}/\text{cm}^2$, which is covers the energy less than $2\text{ J}/\text{cm}^2$.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suygiyama et al. (US5912717A) as applied to claim 1, in view of in view of Ichimura et al. (US6001277A).

Ichimura et al. teach (col. 41 lines 64-67) a method of making a wall of a liquid crystal cell, wherein a material is cross-linked by the irradiation.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a method of making a wall of a liquid crystal cell as Suygiyama et al. disclosed with a material that is cross-linked by the irradiation for improving thermal stability of liquid crystal alignment.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suygiyama et al. (US5912717A) as applied to claim 1, in view of Xu et al. (US6306563B1).

Xu et al. teach (col. 24 lines 52-59) a method of making a wall of a liquid crystal cell, wherein between the source of the radiation and the material, there is interposed a microelement array for transmitting light in orthogonal direction.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a method of making a wall of a liquid crystal cell as Suygiyama et al. disclosed with a microelement array interposes between the source of the radiation and the material for transmitting light in orthogonal direction.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Kim et al. (US6295111B1) disclose a liquid crystal display wherein an alignment layers with the linearly polarized light of energy less than $2\text{J}/\text{cm}^2$.

Sakong (US6208405B1) disclose a method for manufacturing a liquid crystal display with HAN (hybrid aligned nematic) mode liquid crystal display whose one alignment film is homeotropic and the other alignment film is homogeneous.

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Gibbons (US5958292A) disclose a material for inducing alignment of liquid crystals and liquid crystal optical elements with exposing to polarized UV light having energy in range of 0.001 to 5 J/cm².

Contact Information

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Julie Ngo, whose telephone number is (703) 305-3508.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0956.

Papers related to this application may be submitted to Art Unit 2871 by facsimile transmission. The Examiner direct fax number is (703) 746-4709. Please call before sending any paper.



Julie Huyen L. Ngo
Patent Examiner
Art Unit 2871

July 15, 2002